

L and P Band MMIC T/R Module, Phase I

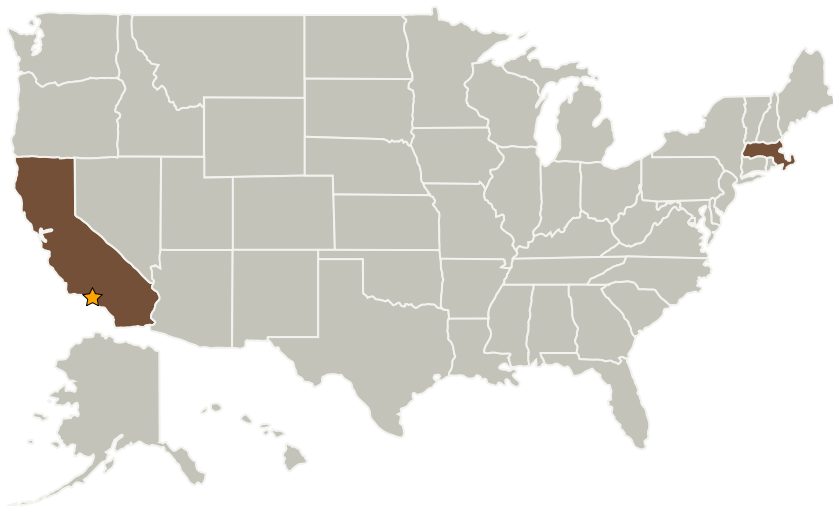
Completed Technology Project (2005 - 2005)



Project Introduction

This proposal is specifically written to address the need for improved L and P band T/R modules. The solicitation calls for investigation and development of core technologies that will significantly improve T/R module performance. Improvements needed include reduced power consumption, mass, size and increased data rates. Hittite microwave corporation is a fables semiconductor company that has been developing microwave monolithic integrated circuits (MMIC) for over 19 years. As described in this proposal Hittite will use the Phase I program to determine the optimal partitioning of the T/R module considering the subsystem requirements, process technology and circuit topologies. The T/R module circuit functions are diverse imposing several different process requirements. For example the key process specification for the LNA is the minimum noise figure (Fmin) of the process, for the control functions the switch cutoff frequency, and for the PA the power added efficiency. Relevant processes to be considered include SiGe, PHEMT, MHEMT, PIN, MEMs, GaN and SiC. Actual process selection will be determined during the Phase I effort once specifications have been fully defined in cooperation with NASA technical personnel. The Phase II program will include the design, development and fabrication of MMICs to implement an L/P band T/R module.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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| Organizations Performing Work | Role | Type | Location |
|----------------------------------|-------------------------|-------------|---------------------------|
| ★ Jet Propulsion Laboratory(JPL) | Lead Organization | NASA Center | Pasadena, California |
| Hittite Microwave Corporation | Supporting Organization | Industry | Chelmsford, Massachusetts |

Primary U.S. Work Locations

| | |
|------------|---------------|
| California | Massachusetts |
|------------|---------------|

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mitchell Shifrin

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.7 Innovative RF Technologies